



Street / Sanitation / Recycling
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April 1, 2010

TO: Mayor Dennis and West Lafayette Board of Works Members
FROM: David A. Downey, Street Commissioner
RE: Specifications for one (1) New 2010 Refuse Truck

For your review and approval, attached is the minimum specifications for a 2010 Class 8 truck with a 23 cubic yard side loader refuse packer body.

Advertizing dates need to be selected and bid opening date set.

Your consideration is appreciated, thank you.

CC: Sana Booker, Member
Brad Marley, Member
Jonathan Speaker, Member
Elizabeth Stull, Member
Judith Rhodes, Clerk-Treasurer
File

Minimum Specifications for 2010 Class 8 single axle 23 cubic yard side loader refuse packer truck.

Packer body to be semi-automated, full ejection, dual-side loading, with 4 cart tippers.

Cab to be dual steer with right side stand up with refuse work brake enabling work to be performed both curb side and street side.

I. BODY

A. CAPACITY

1. The body shall have a usable capacity of twenty-three **(23) cubic yards** including the tailgate.

B. DIMENSIONS

1. Body length – 233” – (including bustle tailgate).
2. Overall height above chassis – 102” – (bin in “down” position).
3. Overall height above chassis – 112” – (bin in full “up” position).
4. Overall body width with loading buckets down – 102”

C. CONSTRUCTION

1. The body floor shall be constructed of 3/16” AR400 steel plate.
2. The body floor shall have 6” x 10.5 lbs. /ft. structural channel long – members.
3. Body sides shall be curved shell style, twelve (12) gauge steel sheet.
4. Body roof shall be curved shell style, fourteen (14) gauge steel sheet.
5. All external welds shall be continuous.

II. TAILGATE

A. CAPACITY

1. The tailgate shall have a usable capacity of 6.30 cubic yards minimum.

B. CONSTRUCTION

1. Body tailgate shall be bustle type, top hinged, with heavy-duty hinges and tapered-pin plunger style locks. Pivots and lock pins must have grease fittings.
2. Tailgate shall be equipped with a flow control device to assure smooth, even operation.
3. Tailgate to be constructed from 12 gauge steel sheet and framed with formed steel channel.
4. Gate shall have a seal across the bottom and at least 12” up each side to control liquid leakage.

C. OPERATION

1. For greater operational stability and safety the tailgate shall be raised and lowered with two 2 ½" bore x 28" stroke double acting hydraulic cylinders.
2. All tailgate controls shall be located inside the truck cab within easy reach of the operator's position. I.E. tailgate operation shall not require exit of the cab by the driver. Controls shall be electric/air/hydraulic and spring returned to the "neutral" position.
3. Tailgate to lock and release hydraulically through the use of positive acting, tapered rod, and plunger style locks.
4. Tailgate ajar and lock status warning light and alarm to be installed in the truck cab.
5. Safety prop for tailgate to be included.
6. All exterior welds to be continuous.

III. PACKER HOPPER

A. FUNCTION

1. The receiving hopper shall have 4.8 cubic yards capacity minimum.
2. Hopper shall act as receiving chamber for materials dumped by the loading bins.
3. Hopper shall be configured so that both left and right side loading bins can be dumped at the same time without contact or interference with each other.

B. CONSTRUCTION

1. Hopper floor to be constructed of 3/16" AR400 steel plate.
2. Hopper side walls to be 3/16" AR400 steel plate.

IV. COMPACTOR

A. FUNCTION

1. Compactor is to move the material dumped by the loading bins from the receiving hopper into the body chamber. Also, compactor is to compress the loaded material to such an extent that the vehicle is loaded to its recommended capacity.

B. OPERATION

1. Compactor to be powered by one (1), 6" bore x 84" stroke, single section, dual acting hydraulic cylinder.
2. Packer cycle shall be 40 seconds @ 1200 R.P.M.
3. When fully extended, compactor must penetrate the body by 18" minimum. This aids compaction of the material and reduces fallback into the loading hopper.
4. Compactor shall displace 2.6 cubic yards/cycle minimum.
5. Compactor shall have "on-demand" style controls with both "**AUTOMATIC PACK**" and "**MANUAL PACK**" selector console mounted in the truck cab and convenient from both sides of cab.
6. Compactor stroke shall be automatically reversible through the use of high quality automotive grade switches sensitive to both position and pressure.
7. Unit to be equipped with a "near-loaded" warning alarm to alert operator that body is approaching its maximum capacity.

C. CONSTRUCTION

1. Compactor to be guided by a floor mounted "T" track beam.
2. Both the "T" track beam and compactor guide shoes must be made of AR400 steel plate.
3. The compactor shall be constructed of engineered steel sections and fully tested using state-of-the-art Finite Stress Analysis technology.

V. LOADING DEVICE

A. FUNCTION

1. The loading device must provide top loading of materials into the receiving hopper.
2. The loading height of the bin shall be approximately 40" (may vary with tire and frame options).
3. Each lifting mechanism must be operated by one (1), 4" bore x 16" stroke, hydraulic cylinder with 1 ½" fluid cushion in both the rod and base ends.
4. Lift cycle time shall be approximately 10 seconds at engine idle.
5. When in the full dump position, the bin dump angle must be 52 degrees minimum, measured from a horizontal line parallel to the ground.
6. The loading bins must tilt 5 degrees during the lift cycle to control spillage.
7. The loading bins must have "CHIP-GUARD" coating on the inside surface for easy clean-out during the dump cycle.
8. The body to bin gap, (space between the loading bin and body sides) must not exceed two (2) inches during the dump cycle. This prevents overhead spillage and reduces the need for clean-up.
9. Bins shall be track guided by roller bearing type steel rollers and stabilized by two lift arms, one at each end.
10. Loading bin lifting mechanism operation must be smooth and non-binding, regardless of uneven bin loading.
11. Loading bin lifting capacity must be 2500 LBS. minimum with a 2 to 1 design safety factor.
12. Loading bin volume shall be one and one half (1 1/2) cubic yard each.
13. Top opening of loading bins shall measure 72" x 22" minimum. Smaller openings are not acceptable.

B. CONSTRUCTION

1. Loading bin lifting arms must be constructed of solid, high tensile steel plate, minimum allowable section modulus for loading bin lift arms shall be 3.0 cubic inches. Tubular load lifting components are not acceptable.
2. All loading bin lift arm connecting pins shall be 1.25" minimum diameter with spring steel bushings and grease fittings.
3. Loading bins shall be constructed of 12 gauge COR-TEN steel sheet supported by a tubular steel frame. Ends of bins shall be 10 gauge COR-TEN steel sheet.

C. CONTROLS

1. Controls for each loading mechanism shall be located immediately behind the chassis cab and convenient for operator access.
2. The lift control valve shall be a three (3) position air directional valve.

VI. BODY UNLOADING

A. FUNCTION

1. Body payload to be offloaded by hydraulically powered horizontal ejection.
2. Ejector panel to be operated by two (2), 3" bore x 80" stroke, single section, double acting hydraulic cylinders.
3. Ejector operation shall be sequenced so that panel will "extend" only when packer panel is in full "extend" position and tailgate is fully "up".
4. Controls to be mounted convenient to operator's in-cab driving location.

B. CONSTRUCTION

1. Ejector panel to have a structural steel tubular frame.
2. Panel guide tracks to be formed 3/16" steel plate.
3. Panel guide/cylinder enclosure tube shall be 5" x 7" x 3/16" structural steel tube equipped with AR400 steel wear strips.
4. Floor level wear pads must be U.H.M.D. Polyurethane.

VII. HYDRAULICS

A. PUMP

All body and lift functions shall be powered by a single-section gear type pump. This pump shall be powered by a transmission mounted "hot shift" power take off.

B. CONTROL VALVE

The body and lift functions shall be controlled by a single stack type air activated directional hydraulic valve. All controls for the body and lift shall be air/hydraulic. This directional control valve shall be equipped with a reliable system pressure protection device. The maximum system operating pressure shall be 2500 P.S.I.

C. HYDRAULIC RESERVOIR

The body shall be equipped with a hydraulic reservoir with a minimum capacity of thirty (30) gallons. This reservoir shall be equipped with a fill cap, breather, fluid level indicator and temperature gauge.

D. FILTRATION AND SERVICE

System cleanliness and protection against contamination shall be accomplished through the use of the following devices.

1. HIGH PRESSURE FILTER.

All oil shall be routed through a 10 micron pressure line filter. This filter shall be installed between the hydraulic pump and the body control valve and properly sized so that 100% of the flow is filtered under normal operating conditions without bypass. Filter must be located so

that all periodic service can be performed from ground level without the need for ladders or work-stands.

2. **IN-LINE SHUTOFF.**

For ease of service the suction line shall be equipped with a shutoff valve plumbed adjacent to the reservoir.

3. **SUCTION STRAINER.**

A 100-mesh oil strainer must be installed in the hydraulic system suction line. This strainer must be serviceable without draining the system reservoir.

E. PLUMBING

All body and lift plumbing not requiring flexibility to complete its function must be constructed of seamless steel hydraulic tubing correctly sized for each operation. Plumbing requiring hoses shall be routed in such a way as to prevent rubbing, chafing and undue bending.

VIII. IN-CAB CONTROLS

The following controls must be mounted inside the truck cab for safe and convenient operation.

1. Hydraulic system on/off switch.
2. Body tailgate control.
3. Body ejector control.
4. Work light and strobe light switches.
5. Camera, hopper and rear.

IX. LIGHTS

1. Standard lights shall be supplied in accordance with FMVSS#108.
2. All body lights must be TRUCKLITE Model "SUPER 44" L.E.D. with SERIES 50 wiring harness.
3. Both street side and curbside loading locations must have work lights.

X. ACCESSORIES

1. Federal under-ride bumper shall be installed.
2. Tailgate safety prop shall be provided.
3. Body "up" and tailgate "unlock" alarm shall be provided.
4. Back up alarm shall be provided.
5. Both body and hopper shall have access doors on each side

For cleaning behind the packer and ejector panels. Doors must be sealed when closed.

XI. PAINTING PROCEDURES

1. The body and lift shall be free of all weld slag, dirt and grease and be prepared prior to painting in accordance with the paint manufacturers specifications.
2. Body and loading mechanism shall receive at least one coat of primer and one finish coat of polyurethane enamel. Primer shall be approved for use with the finish coat material. **Color to be White**

XII. WARRANTY

1. A minimum one-year warranty against manufacturing defects shall be provided by the manufacturer.

XIII. CART ATTACHMENT (optional)

1. Dumping attachment for 30-100 gallon containers.
Semi-automated container attachments must be equipped with positive lock, automatic container latches. These latches must be linkage actuated by the lower bin lift arm and must require no action by the operator other than bin control lever operation. In order to prevent possible container damage, the container latches must automatically engage the container lower bar after the container is well clear of the ground or curb on the bin "up" cycle and automatically release well before the container reaches the ground or curb on the bin "down" cycle. Attachment of semi-automated carts to the container attachment shall not require tipping of the container or opening of the container lid for proper engagement.

CAB AND CHASSIS

GVR:

Requested GVWR, 42,000. GVWR: 35,000
Calc. Start / Grade Ability: 34.90% / 2.31% @ 55 MPH
Calc. Geared Speed: 75.2 MPH

DIMENSION:

Wheelbase: 236.00 CA: 168.90, Axle to Frame: 100.00

ENGINE, DIESEL:

EPA 10, **300 HP** @2200 RPM, 860lb-ft Torque @1300 RPM, 2400RPM
Governed Speed

TRANSMISSION, AUTOMATIC:

Allison 3500-RDS-P 4th Generation Controls; Wide Ratio, 6-speed, with double overdrive; On/Off Hwy; Includes Oil level sensor, with PTO provision, Less Retarder, with 80,000 lb. GVW & GCW Max.

AXLE, FRONT NON DRIVING:

Meritor MFS-12-143A Wide Track, I-Beam Type, 12,000 lb. capacity.

AXLE, REAR, SINGLE:

Meritor RS-30-185 Single reduction, Standard Track, 30,000 lb capacity, T Wheel ends, Driver controlled locking differential gear ratio: 5.86

Cab:

Conventional – Equipped for dual stand up right hand drive.

Tire, Front:

2 - R22.5 AH12 (Hankook) 503 rev/mile, load range H, 16 ply.

Tire, Rear:

4 – 11.22.5 Z35A (Hankook) 503 rev/mile, load range H, 16 ply.

Suspension, RR, Spring, Single:

31,000 lb. Capacity; Includes (3) Torque Rods

Paint:

Cab Schematic 100GA, **color White**

Description:

Base Chassis, compatible for dual steer stand up drive for a dual side load
Semi-automatic 23 cu. Yd. refuse body 4x2 with 236.00 wheelbase, 168.90 CA,
and 100.00 Axle to Frame.

Tow Hooks:

Front, (2) Inside rail, frame mounted.

Frame Rails:

Heat treated alloy steel (12,000 PSI yield); 10.375"x0.438" (263.5mm x
94.1mmx11.1mm); 456.0" (11582mm) Maximum OAL

Front Bumper:

Full width, Aerodynamic, steel; 0.142" material thickness.

Brake System:

Air Dual system for straight truck applications

Brake lines color and size coded nylon

Drain valve twist type

Gauge, air pressure (2) air 1 and air 2 gauges; located in instrument cluster

Parking brake control, yellow knob, located on instrument panel

Parking brake valve for truck

Quick release valve, Bendix on rear axle for spring brake release: 1 x 4x2, 2 for 6
x4

Slack Adjusters, front automatic

Slack Adjusters, Rear Automatic

Spring brake modulator valve R-7 for 4x2, SR-7 with relay valve for 6x4

Air Brake ABS (Bendix antilock brake system) full vehicle wheel control system
(4-channel)

Air Dryer: (Meritor WABCO system saver 1200) with heater

Brake Chambers, Front axle (Haldex) 20SQLN

Brake Chambers, Rear axle (Haldex) GC3030LHDHO) 30/30 spring brake

Air Compressor (Bendix Tu-Flo 550) 13.2CFM capacity

Dust Shields, Front brake for air brakes

Dust Shield, Rear brake a for air brakes

Steering column Tilting

Steering wheel 2- spoke, 18" Diameter, black
Steering gear (Sheppard HD94) Power
Exhaust System: Single, Horizontal after treatment device frame mounted left side under cab; includes vertical tail pipe & bright guard, provides clean CA above & below rail.
Exhaust height 10' – based on empty chassis with standard components (+ or -1" height)
Engine compression brake for Maxx Force 16 engines; electronically activated
Tail Pipe (1) Turn back type, bright, for single exhaust.
Electrical System: 12-volt, standard equipment.
Alternator: (Leece-Neville LBP2203H) Brush type, 12volt 160 AMP. Capacity, Pad Mounted
Battery system: (International) Maintenance free, (3) 12-volt 1950CCA total

Radio: (International) AM/FM Stereo with weather band, clock, auxiliary input, includes multiple dual cone speakers.

Includes: Speakers in cab (2) Dual Cone with Deluxe interior

Speakers in cab (4) coaxial with premium interior

To include power source for 2-way radio.

Power Source, terminal type 2- post

Horn, Air black, single trumpet, air solenoid operated

Windshield Wiper SPD control: Force wipers to slowest intermittent speed when park brake set and wipers left on for a predetermined time.

Headlights: Halogen, Composite aero design for two light system; includes Daytime running lights.

Test exterior lights: pre-trip inspection will cycle all exterior lamps except back up lights.

Headlights on w/wipers: Headlights will automatically turn on if windshield wipers are turned on.

Starting Motor (Delco Remy 38MT Type 300) 12 volt; less thermal over-crank protection.

Indicator, Low Coolant Level with Audible alarm.

Alarm: Parking brake electric horn sounds in repetitive manner when vehicle park brake is "NOT" set, with ignition "OFF" and any door opened.

Battery Disconnection Switch: (Maval 8070050) Positive type, with provision for padlock lockout. Mounted on battery box.

Circuit Breakers: Manual reset (Main Panel) SAE type III with trip indicators, replaces all fuses except for 5-AMP fuses.

Grille, Chrome

Bug Screen: Front End; mounted behind grille

Front End: Tilting, Fiberglass, with three piece construction³

Paint Schematic, PT-1 Single Color, Design 100 **WHITE**

Block Heater: Engine (Phillips) 120 volt/1250 Watt

Block Heater Socket: Receptacle type; mounted below drivers' door

Governor: Electronic

Oil Filter: Spin-on type

Wet type Cylinder Sleeves

Radiator: Aluminum; 2-row, cross flow, over under system, 1045 sq. in. Louvered,
With 369 sq. in. LTR, with in tank transmission oil cooler.

Federal Emissions for 2010

Allison Spare Input/Output for Rugged Duty service (RDS); front loaders, rear loaders, recycling/packer trucks.

Air cleaner with service protection element.

Shift Control Parameters: Allison performance programming in Primary and Allison Economy Programming in Secondary

Axle, Rear, Single: (Meritor RS_30-185) Single reduction, standard track, 30,000 lb. capacity, T wheel ends, driver controlled locking differential. Gear ratio: 5:86

Suspension, RR Spring, Single 31,000 lb. capacity; includes (3) Torque Rods Axle, Rear, Lube (Emgard 75W-90) Synthetic Oil; 40 thru 49.99 pints.

Fuel Tank: Tope Draw; D style, non polished aluminum, 19" deep, 50 US Gal., 190L capacity, beveled back of tank, with quick connect outlet, mounted left side, under cab.

CAB: Conventional - Dual steer stand up right hand drive

Arm Rest: (2) molded plastic; one each door

Clearance/Marker Lights: (5) flush mounted

Coat Hook: Cab located on rear wall, centered above rear window

Cup Holders: two cup holders, located in lower center of instrument panel

Dome Light: Cab rectangular, door activated and push on-off at light lens, Time Theater dimming, integral to console, center mounted

Glass: All Windows tinted

Grab Handle: Cab interior (1) "A" pillar mounted, passenger side

Grab Handle, Cab Interior (2) front of "B" pillar mounted, one each side

Interior Sheet Metal: Upper door (above window ledge) painted exterior color

Step: (4) Two steps per door

Seat: Passenger omit item

Heater Hoses: Silicone

Gauge Cluster: English with English electronic speedometer

Includes:

Gauge Cluster (5) engine oil pressure (Electronic), Water Temperature (Electronic), Fuel (Electronic), Tachometer (Electronic), Voltmeter

Odometer Display: Miles, Trip Miles, Engine Hours, Trip Hours, Fault code readout.

Warning System: Low Fuel, Low Oil Pressure, High Engine Coolant Temp, and Low Battery Voltage (Visual and Audible)
GAUGE, OIL, TEMP, ALLISON TRAN.

IP Cluster Display: On board diagnostics display of fault codes in gauge cluster.

Seat: Driver (National 2000) Air Suspension, High Back with integral headrest, vinyl, isolator, 1 chamber lumbar, with 2 position front cushion adjust, -3 to +14 degree angle back adjust.

Seat Belt: 3-point, lap and shoulder belt type

Mirrors: (2) (Lang Mekra) styled; Rectangular, 7.09" x 15.75" & integral convex both sides, 102" inside spacing, breakaway type, Heated heads thermostatically controlled, power both sides, clearance lights LED, Bright finish Heads and Brackets.

Access: Cab and driver & Passenger sides, with two temporary steps on the passenger side, for conventional cab.

Cab Mounting High Effects: Mid cab in lieu of low cab mounting height (Approx. 4") for increased cooling system requirements.

Description:

Air Conditioner: (International Blend-Air) with integral Heater & Defroster

Clamps, Heater Hose: (Breeze) Belleville Washer Type

Instrument Panel: Center section, flat panel

Heater Hoses Premium

Refrigerant Hydro fluorocarbon HFC-134A

Hour meter: PTO for customer provided PTO; with indicator light and hour meter in gauge cluster includes return wire for PTO feedback switch.

Cab Interior Trim

Includes:

"A" Pillar covered molded plastic

Cab Interior trim panels heavy duty vinyl molded plastic; full height; all exposed interior sheet metal is covered except for the following: with a two-man passenger seat or with a full bench seat the back panel is completely void of covering.

Console, Overhead molded plastic; with dual storage pockets with retainer nets and CB Radio pocket

Door Trim Panels: Molded plastic; driver and passenger doors

Floor Covering: Rubber, black

Headliner: Soft padded cloth

Instrument Panel Trim: Molded plastic with black center section

Storage Packet: Door (1) molded plastic, full-length; driver door

Sun Visor: (2) Padded vinyl with driver side toll ticket strap, integral to console.

Cab Rear Suspension Air Bag Type

Wheels, Front Disc; 22.5 painted steel, 2 hand hole, 10 stud (285.75MM BC) Hub

Piloted, flanged nut, metric mount, 8.25 DC Rims; with steel hubs

Includes:

Paint identity, front wheels **WHITE**

Wheel seals, front grease lubricated, includes wheel bearings

Compatible Tire Sizes: 11R22.5, 12R22.5, 255/70R22.5, 265/75R22.5, 275/70R22.5, 275/80R22.5, 295/75R22.5, 295/80R22.5

Wheels, rear dual disc; 22.5" painted steel, 2 hand hole, 10-stud (285.75MM BC)

Hub Piloted, flanged nut, metric mount, 8.25 DC Rims; with steel hubs

Includes:

Paint Identity, rear wheels **WHITE**

Wheel seals, rear oil lubricated, includes wheel bearings

(2) Tires, Front 11.22.5 AH12 (Hankook) 503 rev/mile, load range H, 16ply

(4) Tires, Rear 11.22.5 Z35A (Hankook) 503 rev/mile, load range H, 16 ply

**OPTIONAL TRADE: 1990 Ford 8000 with 25 cu.yd. Leach refuse body
Ser, # 1FDZY828LVA12842**